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Atty. Docket: 15-UL-6174

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Application of:

Gopal B. Avinash et al. : Group Art Unit: 2624

Serial No.: 10/064,873 : Examiner: Seth, M.

Filed: August 26, 2002

Title: SYSTEM AND METHOD FOR PROCESSING
ANNOTATED SCREEN CAPTURE IMAGES BY
AUTOMATED SELECTION OF IMAGE REGIONS

Hon. Commissioner for Patents
Alexandria, VA 22313

APPEAL BRIEF

A Notice of Appeal was filed in the above-identified application on May 21, 2007. A Pre-Appeal Brief Request for Review was filed concurrently therewith. On July 11, 2007, a Notice of Panel Decision from Pre-Appeal Brief Review was mailed in which the time for filing an appeal brief was reset to be one month from the mailing of the decision, i.e., August 11, 2007. A petition requesting a one-month extension of time for filing this Appeal Brief is being filed concurrently herewith.

The fee for filing an appeal brief, in the amount of \$500.00, and the fee for a one-month extension of time, in the amount of \$120.00, should be charged to Deposit Account No. 07-0845.

1. Real Party in Interest

GE Medical Systems Global Technology Company, LLC, having offices in Waukesha, Wisconsin, is the assignee and owner of

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100% interest in this patent application and therefore is the real party in interest.

2. Related Appeals and Interferences

The appellants, appellants' legal representative and the assignee do not know of any other appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

3. Status of Claims

Claims 33-48 are pending; claims 1-32 have been canceled. The Final Rejection of claims 33-48 is being appealed.

4. Status of Amendments

No Amendment was filed after the Final Rejection mailed on February 22, 2007.

5. Summary of Claimed Subject Matter

This application has two independent claims 33 and 45. Both independent claims are involved in this appeal.

Claim 33. The subject matter recited in independent claim 33 is a method of processing annotated images comprising the following steps:

acquiring data representing a grayscale image (§ 6, ll. 3-4; § 18, ll. 2-3; § 23, ll. 1-2);

adding data representing a textual annotation to said acquired grayscale image data (§ 2, ll. 2-3; § 23, ll. 2-3);

displaying an annotated grayscale image comprising said grayscale image with said textual annotation overlaid thereon (¶ 23, ll. 2-5; block 28 in Figure 2);

storing data representing said annotated grayscale image in the data format used for said displaying step (¶ 23, ll. 2-5; ¶ 33, ll. 1-2; block 28 in Figure 2);

removing data representing said textual annotation from said stored data representing said annotated grayscale image to derive data representing an unannotated grayscale image (¶ 22, ll. 3-4; ¶ 24, ll. 1-8);

processing said data representing said unannotated grayscale image using an algorithm to derive data representing a processed grayscale image (¶ 22, ll. 4-5; ¶ 26, ll. 1-8; block 32 in Figure 2); and

merging said removed data representing said textual annotation and said data representing said processed grayscale image, said merged data representing an annotated processed grayscale image (¶ 22, ll. 6-7; ¶ 27, ll. 1-6; block 34 in Figure 2).

Claim 45. The subject matter recited in independent claim 45 is a method of processing annotated images comprising all of the same steps as recited in claim 33, except that the image processed is an HSV color image, not a grayscale image. The recited steps, with cites to the specification, are as follows:

acquiring data representing a HSV color image (§ 34, ll. 1-3);

adding data representing a textual annotation to said acquired HSV color image data (§ 2, ll. 2-3; § 34, ll. 1-3);

displaying an annotated HSV color image comprising said HSV color image with said textual annotation overlaid thereon (§ 23, ll. 2-5; block 28 in Figure 2);

storing data representing said annotated HSV color image in the data format used for said displaying step (§ 23, ll. 2-5; block 28 in Figure 2);

removing data representing the hue and saturation components from said data representing said annotated HSV color image to derive data representing an annotated brightness component image (§ 34, ll. 3-5);

removing data representing said textual annotation from said stored data representing said annotated brightness component image to derive data representing an unannotated brightness component image (§ 34, ll. 5-7; § 24, ll. 1-8);

processing said data representing said unannotated brightness component image using an algorithm to derive data representing a processed brightness component image (§ 34, ll. 7-9; § 26, ll. 1-8; block 32 in Figure 2); and

merging said removed data representing said textual annotation and said removed data representing said hue and saturation components with said data representing said

processed brightness component image, said merged data representing an annotated processed HSV color image (§ 34, ll. 9-11; block 34 in Figure 2).

6. Grounds of Rejection to Be Reviewed on Appeal

In ¶ 4 of the February 22, 2007 office action, claims 33-48 were finally rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

In ¶ 6 of the February 22, 2007 office action, claim 33 was finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeshoji (US 5,761,339) in view of Applicants' admitted prior art. [If the rejection of claim 33 is reversed, then likewise the rejection of claims 34-44 (dependent on claim 33) must also be reversed for the same reasons since claims 34-44 were finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeshoji (US 5,761,339) in view of Applicants' admitted prior art, and further in view of MacLeod (US 5,778,092) and Bloomberg (US 5,065,437).]

In ¶ 8 of the February 22, 2007 office action, claims 45-48 were finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeshoji in view of MacLeod and Bloomberg, and further in view of Gonzales et al.

7. Argument

The Appellants believe that the Final Rejection is mistaken for the following reasons.

A. Section 112 Rejection of Claims 33-48

In support of the Section 112 rejection, the Examiner asserts that no support can be found in the claims and specification as originally filed for "the process of adding annotations to the image." The Examiner makes this assertion despite conceding that this step is disclosed in ¶ 0002 of the Background of Invention section in the original specification.

It is well settled that a claim may include limitations from the prior art so long as the claim includes an additional non-obvious limitation not found in the prior art. For example, a Jepson claim may be submitted in which the preamble recites the state of the art and the remainder recites an improvement over the prior art. Thus, on its face, it is clear error to assert that a claim limitation cannot find support in the Background section of the specification.

Moreover, in the instant case the Examiner is clearly wrong because a portion of Applicants' specification, not in the Background section, provides a clear basis for the recited step of "adding data representing a textual annotation to said acquired grayscale image data," recited in Applicants' claim 33. Specifically, ¶ 0023 states: "The process starts with a screen capture image 28 having one or more annotations burnt in the image." The term of art "burnt" is explained in ¶ 0002,

which states: "The annotations are typically burnt in by overlaying an arbitrary intensity value of text on the image." The term "overlaying" clearly means that the annotations are added, as recited in claim 33.

Furthermore, the Brief Description of Drawings section describes Figure 2 as being "a flowchart generally representing the sequence of steps of an image processing algorithm in accordance with some embodiments of the invention." Block 28 in Figure 2 contains the legend "Screen Capture Image with Burnt Annotation". Obviously, there can be no "burnt annotation" in the image in the absence of the annotation being added to the image.

Accordingly, the recited step of adding a textual annotation to image data finds clear support in the specification and the Section 112 rejection is mistaken.

B. Section 103(a) Rejection of Claims 33-44

In support of the rejection of claim 33 as being unpatentable over Ikeshoji "in view of Applicants' admitted prior art," the Examiner broadly states that Ikeshoji "is directed to enhancing or correcting images that are annotated grayscale images." Appellants respectfully disagree. Ikeshoji states in numerous places that his invention is intended for use in removing stains or scratches from a photograph, picture or document of characters and/or figures by electronically scanning the photograph, picture or document and then electronically removing the stain or scratch. Ikeshoji neither

discloses nor suggests that annotations are added to the image acquired by the scanner before the scanner-acquired image undergoes electronic processing. Nor does Ikeshoji disclose or suggest adjusting the brightness or contrast of the scanner-acquired image. Appellants submit that it would not have been obvious to apply Ikeshoji's technique to situations where one desires to improve the contrast or brightness of an acquired image that had annotations added to it after image acquisition.

Moreover, Ikeshoji merely teaches that characters and/or figures in an image can be separated from a background so that the background can then be electronically processed to remove stains and scratches existing on a document that has been scanned. In contrast, the object of Appellants' process is to enhance an annotated image without altering annotations burnt into the image. The "burning" is an electronic process performed on electronic image data and does not involve alteration or annotation of a physical document. Appellants respectfully submit that it would not be obvious to transfer any teaching of Ikeshoji, which deals with enhancing physical documents by converting them into electronic images, to the field of electronically annotated electronic images not derived by scanning a physical document.

For the foregoing reasons, Appellants submit that the rejection of claim 33 as being obvious over Ikeshoji in view of admitted prior art (i.e., annotated ultrasound images) is mistaken. Appellants submit that dependent claims 34-44 are allowable at least for the same reasons that claim 33 is

allowable.

C. Section 103(a) Rejection of Claims 45-48

In ¶ 6 of the February 22, 2007 office action, claim 33 was finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeshoji in view of "Applicants' admitted prior art," and further in view of Macleod, Bloomberg and Gonzalez. Appellants submit that this rejection is mistaken for the same reasons, set forth above, that claim 33 is allowable and for the following additional reasons.

As noted above, Ikeshoji is concerned with removing stains from photographs or pictures. Ikeshoji teaches that colored stains can be removed by a process of matching the histograms of the stained portion to the histograms of the unstained portion of the photo or picture. Ikeshoji neither discloses nor suggests removing hue and saturation data from a color image, processing the remaining brightness component, and then restoring the hue and saturation components, as recited in Appellants' claim 45. Since Ikeshoji neither discloses nor suggests enhancing the unstained portions of a color image, Applicants respectfully submit it would not be obvious to combine the color processing techniques disclosed in the Gonzalez article with Ikeshoji. Appellants submit that dependent claims 46-48 are allowable at least for the same reasons that claim 45 is allowable.

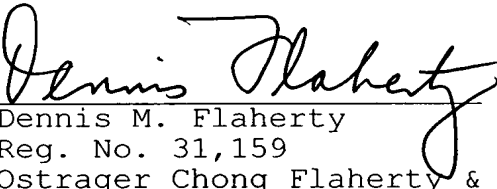
In view of the foregoing, Appellants submits that claims 33-48 should have been allowed by the Examiner. Accordingly, it

is respectfully requested that the Final Rejection be overturned and that this application be allowed.

Respectfully submitted,

September 11, 2007

Date


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CERTIFICATE OF MAILING

The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date set forth below.

September 11, 2007

Date


Dennis M. Flaherty

8. Claims Appendix

Claim 33: A method for processing annotated images comprising the following steps:

acquiring data representing a grayscale image;

adding data representing a textual annotation to said acquired grayscale image data;

displaying an annotated grayscale image comprising said grayscale image with said textual annotation overlaid thereon;

storing data representing said annotated grayscale image in the data format used for said displaying step;

removing data representing said textual annotation from said stored data representing said annotated grayscale image to derive data representing an unannotated grayscale image;

processing said data representing said unannotated grayscale image using an algorithm to derive data representing a processed grayscale image; and

merging said removed data representing said textual annotation and said data representing said processed grayscale image, said merged data representing an annotated processed grayscale image.

Claim 34: The method as recited in claim 33, wherein said removing step comprises the following: deriving data representing a first binary mask defining one or more image regions; and multiplying said data representing said first binary mask and said data representing said annotated grayscale

image to derive said unannotated grayscale image.

Claim 35: The method as recited in claim 34, wherein said merging step comprises the following: inverting said data representing said first binary mask to derive data representing a second binary mask defining one or more annotation regions; multiplying said data representing said second binary mask and said data representing said annotated grayscale image to derive data representing a modified image; and merging said data representing said modified image and said data representing said processed grayscale image to derive said data representing said annotated processed grayscale image.

Claim 36: The method as recited in claim 33, wherein the merged textual annotations occupy the same pixels in said annotated processed grayscale image that the removed textual annotations originally occupied in said annotated grayscale image.

Claim 37: The method as recited in claim 33, wherein said removing step comprises morphology-based processing and thresholding.

Claim 38: The method as recited in claim 33, wherein said removing step comprises the following: grayscale erosion of said data representing said annotated grayscale image using a structuring element to derive data representing an eroded grayscale image; thresholding said data representing said eroded grayscale image to derive data representing a first

binary mask; dilation of said data representing said first binary mask using said structuring element to derive data representing a second binary mask defining one or more image regions; and multiplying said data representing said second binary mask and said data representing said annotated grayscale image to derive said data representing said image.

Claim 39: The method as recited in claim 38, wherein said merging step comprises the following: inverting said data representing said second binary mask to derive data representing a third binary mask defining an annotation region; multiplying said data representing said third binary mask and said data representing said annotated grayscale image to derive data representing a modified image; and merging said data representing said modified image and said data representing said processed grayscale image to derive said annotated processed grayscale image.

Claim 40: The method as recited in claim 33, wherein said removing step comprises thresholding and pixel connectivity-based analysis.

Claim 41: The method as recited in claim 33, wherein said removing step comprises the following: thresholding said data representing said annotated grayscale image to derive data representing a first binary mask; using 8-connected analysis to reject segments smaller than a prespecified size from said first binary mask to derive data representing a second binary mask defining one or more image regions; and multiplying said

data representing said second binary mask and said data representing said annotated grayscale image to derive said data representing said unannotated grayscale image.

Claim 42: The method as recited in claim 41, wherein said merging step comprises the following: inverting said data representing said second binary mask to derive data representing a third binary mask defining an annotation region; multiplying said data representing said third binary mask and said data representing said annotated grayscale image to derive data representing a modified image; and merging said data representing said modified image and said data representing said processed grayscale image to derive said data representing said annotated processed grayscale image.

Claim 43: The method as recited in claim 33, wherein said removing step comprises the following: thresholding said data representing said annotated grayscale image to derive data representing a first binary mask; using 8-connected analysis to reject segments smaller than a prespecified size from said first binary mask to derive data representing a second binary mask defining one or more image regions; removing holes from said data representing said second binary mask to derive data representing a third binary mask; and multiplying said data representing said third binary mask and said data representing said annotated grayscale image to derive said data representing said unannotated grayscale image.

Claim 44: The method as recited in claim 33, wherein said processing step comprises filtering to enhance said modified image.

Claim 45: A method for processing annotated images comprising the following steps:

acquiring data representing a HSV color image;

adding data representing a textual annotation to said acquired HSV color image data;

displaying an annotated HSV color image comprising said HSV color image with said textual annotation overlaid thereon;

storing data representing said annotated HSV color image in the data format used for said displaying step;

removing data representing the hue and saturation components from said data representing said annotated HSV color image to derive data representing an annotated brightness component image;

removing data representing said textual annotation from said stored data representing said annotated brightness component image to derive data representing an unannotated brightness component image;

processing said data representing said unannotated brightness component image using an algorithm to derive data representing a processed brightness component image; and

merging said removed data representing said textual annotation and said removed data representing said hue and

saturation components with said data representing said processed brightness component image, said merged data representing an annotated processed HSV color image.

Claim 46: The method as recited in claim 45, wherein said textual annotation removing step comprises the following: deriving data representing a first binary mask defining one or more image regions; and multiplying said data representing said first binary mask and said data representing said annotated brightness component image to derive said unannotated brightness component image.

Claim 47: The method as recited in claim 46, wherein said merging step comprises the following: inverting said data representing said first binary mask to derive data representing a second binary mask defining one or more annotation regions; multiplying said data representing said second binary mask and said data representing said annotated brightness component image to derive data representing a modified image; and merging said data representing said modified image and said data representing said processed brightness component image with said removed data representing said hue and saturation components to derive said data representing said annotated processed HSV color image.

Claim 48: The method as recited in claim 45, further comprising the step of converting an annotated RGB color image from RGB color space to HSV color space to derive said annotated HSV color image.

9. Evidence Appendix

None.

10. Related Proceedings Appendix

None.